Advanced Mobility Research Center
[Designing the Next Generation Transport Systems]

Intelligent Transport Systems

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http://www.its.iis.u-tokyo.ac.jp/

- **ITS (Intelligent Transport Systems)** is an advanced transport system in which various fields, such as transport engineering, vehicle engineering, information technology, are integrated.
- The Advanced Mobility Research Center promotes research and development of ITS through collaboration of academia, public, and private sectors.
- In July 2018, the ITS Center took the lead in launching the Mobility Innovation Collaborative Research Organization (UTmobl) as a cross-departmental organization within the university, and since July 2019 it has been promoting it with an eight-department structure.
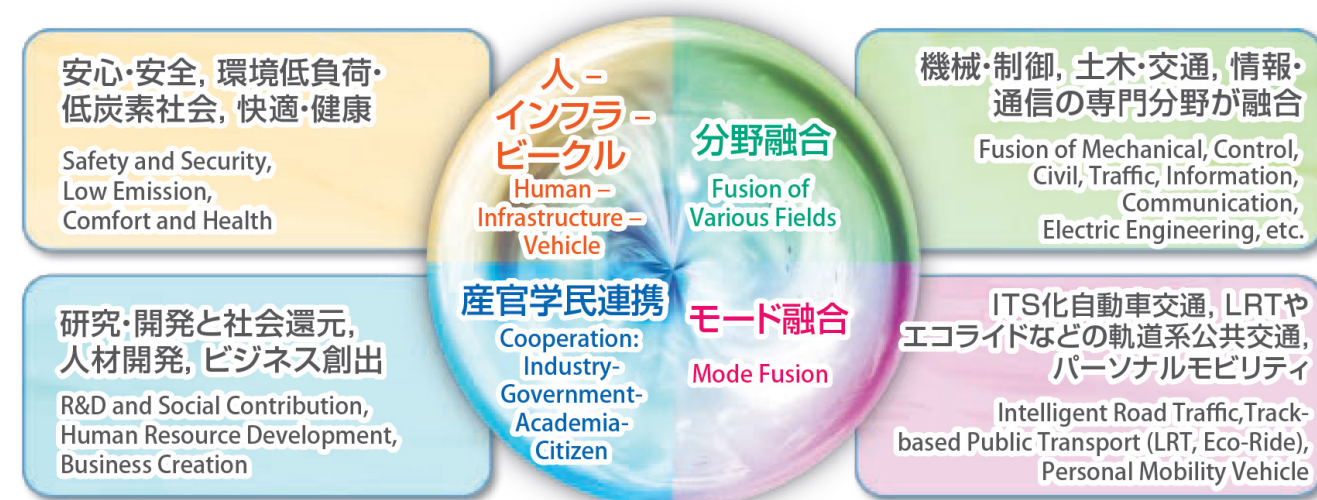
History

- ◆ 2003.4 "Sustainable ITS", a cooperative project among academia, industry, and the government, started in CCR
- ◆ 2005.3 "Collaborative Research Center for Advanced Mobility (ITS Center)" established in IIS (Director: Prof. Dr. Ikeuchi)
- ◆ 2009.4 Upgraded to "Advanced Mobility Research Center (ITS Center)," an university-authorized research center (Director: Prof. Dr. Kuwahara)
- ◆ 2014.4 "Advanced Mobility Research Center (ITS Center)" (Director: Prof. Dr. Suda)
- ◆ 2018.4 Director: Prof. Dr. Oguchi
- ◆ 2019.4 Update members and strengthening the organization

Research and Developments on ITS

Various Traffic Simulation Models (TS)

Traffic simulators (TS) of various scales developed, to evaluate political options with high accuracy

- **SOUND** : A network traffic simulator, covering a wide network including expressways, while vehicles are considered individually .
- **AVENUE** : A street-level traffic simulator, based on the detailed maneuvers of individual vehicles, such as lane changing at an intersection. Used for evaluating traffic operation strategies, reducing congestion on streets, etc.
- **KAKUMO** : A micro traffic simulator, connecting TS and DS. It fills the gap of spatiotemporal resolution between TS and DS by calculating driver's behavior and vehicle dynamics of hundreds of vehicles around the test driver in DS. Simultaneously, the behavior of the test driver in DS is reflected to TS, and then the movements of surrounding vehicles and the traffic condition change interactively.
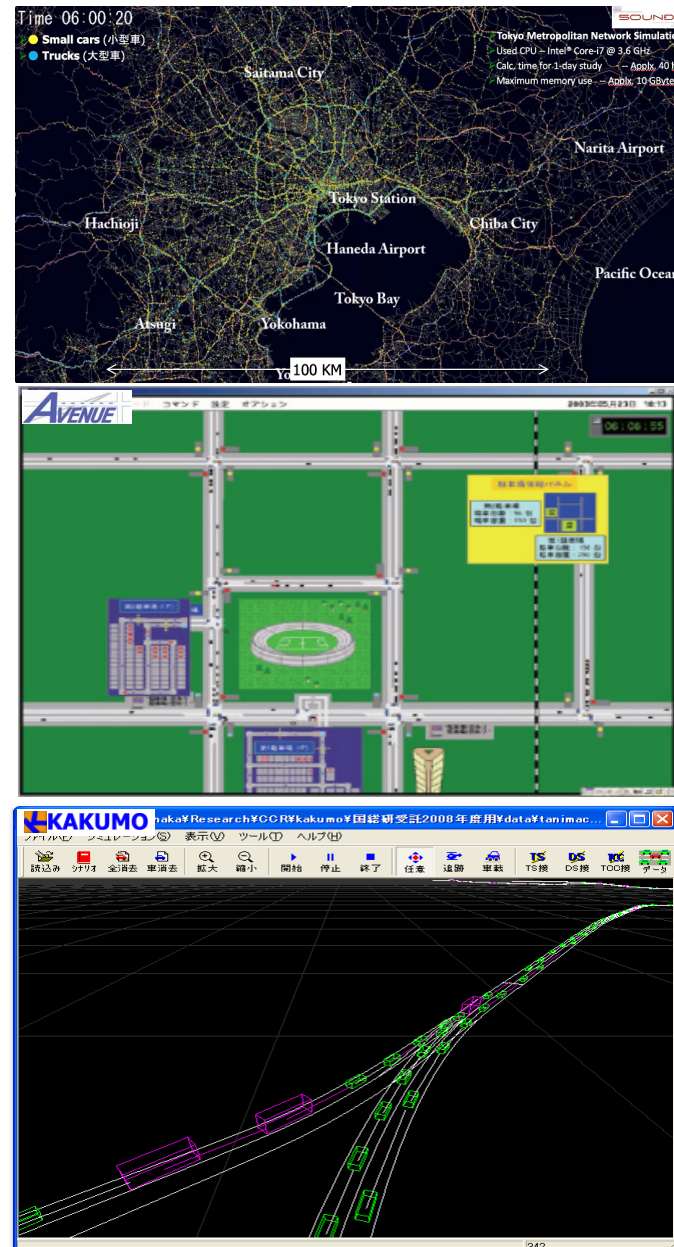
ITS R&R Experiment Field

Experiment fields for automobiles and trains and a driving simulator for large vehicle.

Large-Scale Experiment and Advanced-Analysis Platform, Kashiwa Campus

Next-Generation Infrastructure

- **Autonomous Traffic Signal System**

Comparative study of far/near side signal

Technological studies on automated driving
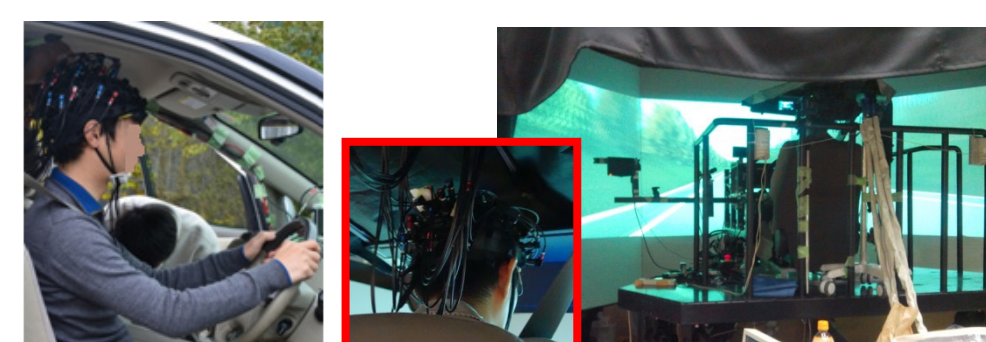
- **Driving test of automated driving bus**

Sensing

- **Sensing Vehicle**

Sensing vehicles are developed for collecting various real-world data while running on the field. **MAESTRO II** can measure location, speed, acceleration, and direction of the experimental vehicle itself with relative positioning of the following vehicle, which is applied for analyzing behaviors of vehicles and drivers under various traffic conditions.
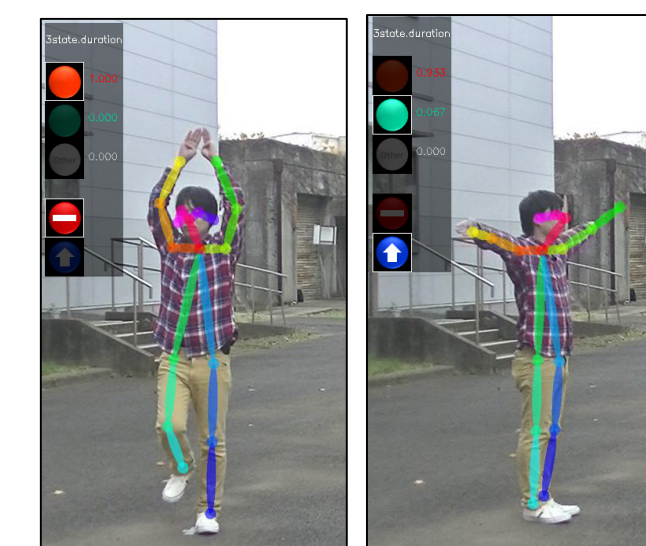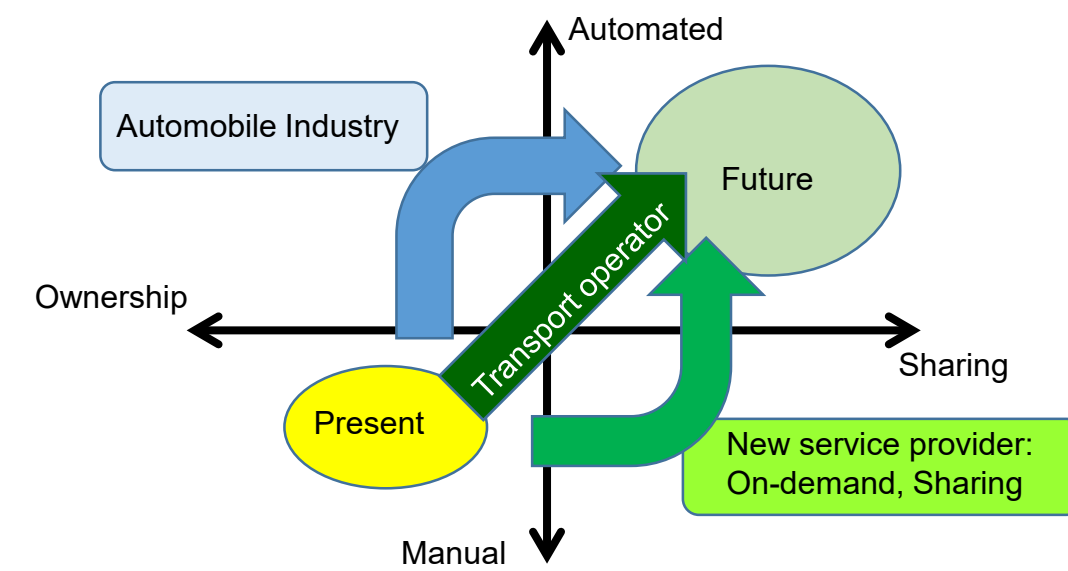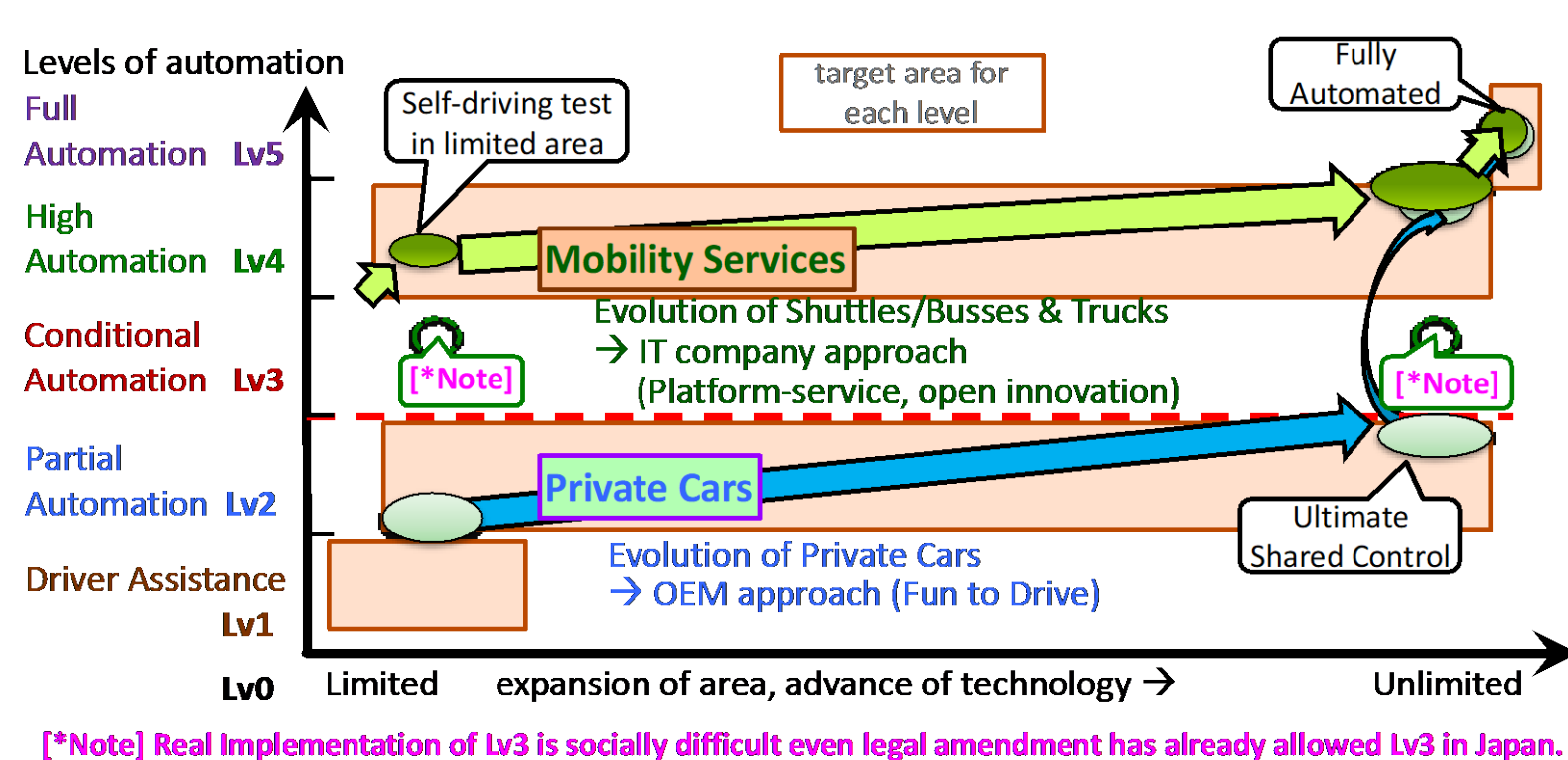
- **Driver Sensing**

Analysis on driving operation and cortical brain activity using fNIRS.

- **Recognition of hand signals by the in-vehicle camera**

Societal implementation of automated driving

- **Automated Driving emerging scenario proposal and the Impact Analysis**

Assessment of bipolarized mobility innovation scenarios, cross-field academic collaboration

Kashiwa ITS FOT Model City

- **Kashiwa ITS Smart City**

ITS research activities launched for environment-friendly transport society in Kashiwa City, which is designated as one of the ITS FOT model cities by the Cabinet Office of Japan
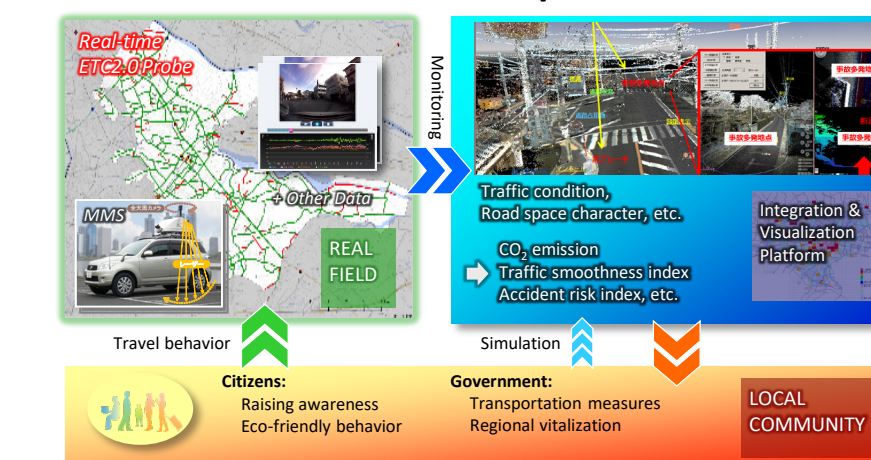
- **Field test of automated driving bus**

Kashiwa Campus UTokyo ⇔ Kashiwanoha-Campus Station

Human Resource Development and Social Return Activities

- **ITS Seminar**: Series of seminars organized about three times a year, and ITS based on needs from local areas as well as central administration promoted
- **Lectures**: Not only lectures for students but also a special course for private sectors organized for developing human resource in ITS industry
- **Research Committee**: Informal discussions about latest ITS topics hosted every month inviting speakers from academia, industry, and government

Global Collaboration

ITS Center hosts an international symposium every year and exchanges faculty members and students with other universities and institutes through international collaboration as well as domestic collaboration.

Institute of Industrial Science, The University of Tokyo